

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A simulation environment with a time component, the simulation environment comprising:

a first unit that produces data;

a second unit for consuming the data; and

a dynamic first-in first-out buffer (FIFO) that interfaces between the first unit and the second unit, the dynamic FIFO capable of automatically increasing its size based on a configurable wait period to eliminate deadlock, wherein the dynamic FIFO determines whether a wait period has expired before increasing its size, and wherein an optimized size of the dynamic FIFO in the simulation environment determines an optimized FIFO memory size for a silicon implementation.

2. (Cancelled)

3. (Currently Amended) The simulation environment of Claim ~~2~~ 1, wherein the dynamic FIFO is further capable of automatically increasing the wait period if its size is increased a predetermined number of times.

4. (Original) The simulation environment of Claim 1, wherein the dynamic FIFO has a timing behavior substantially similar to that of the second unit.

5. (Original) The simulation environment of Claim 1, wherein the dynamic FIFO has a different timing behavior than that of the second unit.

6. (Currently Amended) A tool used in a simulation environment, the simulation environment including a first unit

that produces data and a second unit for consuming the data, the tool comprising:

a dynamic first-in first-out buffer (FIFO) that interfaces between the first unit and the second unit, the dynamic FIFO capable of automatically increasing its size based on a configurable wait period to eliminate deadlock between the first and second units, wherein the dynamic FIFO determines whether a wait period has expired before increasing its size, and wherein an optimized size of the dynamic FIFO in the simulation environment determines an optimized FIFO memory size for a silicon implementation.

7. (Cancelled)

8. (Currently Amended) The tool of Claim 7 6, wherein the dynamic FIFO is further capable of automatically increasing the wait period if its size is increased a predetermined number of times.

9. (Original) The tool of Claim 6, wherein the dynamic FIFO has a timing behavior different than that of the second unit.

10. (Previously Presented) A method of decreasing simulation time for a design, the simulation including a first model and a second model, the first model representing a first block of the design that generates a plurality of tokens, the second model representing a second block of the design that consumes the plurality of tokens based on a behavior, the method comprising:

providing a dynamic memory for receiving the tokens, storing the tokens, and providing the tokens in an order output by the first model when requested by the second model;

setting a wait period of the dynamic memory, wherein the wait period is defined by a predetermined number of cycles associated with the behavior;

decreasing the wait period each time the dynamic memory is full and the second model does not request a token; and

automatically increasing a size of the dynamic memory by an increment when the wait period is zero,

wherein decreasing the wait period and increasing the size, as needed, optimize the size and wait period of the dynamic memory, wherein an optimized size and wait period of the dynamic memory provides an actual memory size and wait period for a silicon implementation of the design.

11. (Original) The method of Claim 10, further including resetting the wait period after increasing the size of the dynamic memory.

12. (Original) The method of Claim 10, wherein the dynamic memory includes a first-in first-out buffer (FIFO).

13. (Original) The method of Claim 10, further including setting a maximum size of the dynamic memory.

14. (Original) The method of Claim 10, further including increasing a counter value each time the size of the memory increases.

15. (Original) The method of Claim 14, further including automatically increasing the predetermined number of time units defining the wait period if the counter value exceeds a limit.

16. (Original) The method of Claim 15, further including setting a maximum wait period for the dynamic memory.

17. (Original) The method of Claim 15, wherein automatically increasing the size of the dynamic memory and automatically increasing the predetermined number of time units defining the wait period are alternately performed.

18. (Previously Presented) A dynamic memory useable in a simulation environment, the dynamic memory providing an interface between a first model and a second model, the first model generating a plurality of tokens, the second model consuming the plurality of tokens based on a behavior, the dynamic memory device comprising:

means for handling the tokens including receiving the tokens, storing the tokens, and providing the tokens in an order output by the first model when requested by the second model,

means for setting a wait period of the dynamic memory device, wherein the wait period is defined by a predetermined number of time units associated with the behavior;

means for decreasing the wait period each time the dynamic memory is full and the second model does not request a token; and

means for increasing a size of the means for storing the tokens by an increment if the wait period is zero,

wherein an optimized combination of size and wait period of the means for storing the tokens provides an actual memory size and wait period for a silicon implementation.

19. (Original) The dynamic memory of Claim 18, further including means for resetting the wait period after increasing the size of the dynamic memory.

20. (Original) The dynamic memory of Claim 18, wherein the means for handling the tokens is implementable with a first-in first-out buffer (FIFO).

21. (Original) The dynamic memory of Claim 18, further including means for setting a maximum size of the dynamic memory.

22. (Original) The dynamic memory of Claim 18, further including means for increasing a counter value each time the size of the dynamic memory increases.

23. (Original) The dynamic memory of Claim 22, further including means for increasing the predetermined number of cycles defining the wait period if the counter value exceeds a limit.

24. (Original) The dynamic memory of Claim 23, further including means for setting a maximum wait period for the dynamic memory.

25. (Original) The dynamic memory of Claim 24, further including means for alternately increasing the size of the dynamic memory and increasing the predetermined number of cycles defining the wait period.

26. (Currently Amended) A simulation environment with a time component, the simulation environment comprising:

- a first unit that produces data;
- a second unit for consuming the data;

a dynamic first-in first-out buffer (FIFO) that interfaces between the first unit and the second unit,

the dynamic FIFO capable of automatically increasing its size based on a configurable wait period to eliminate deadlock between the first and second units, thereby determining an optimized size of the dynamic FIFO,

the dynamic FIFO determining whether a wait period has expired before increasing its size, and

the dynamic FIFO including an output unit that provides the optimized size to a simulator to reduce simulation time of the first and second units.

27. (Cancelled)

28. (Currently Amended) The simulation environment of Claim ~~27~~ 26, wherein the dynamic FIFO is further capable of automatically increasing the wait period if its size is increased a predetermined number of times.

29. (Previously Presented) The simulation environment of Claim 26, wherein the dynamic FIFO has a timing behavior substantially similar to that of the second unit.

30. (Previously Presented) The simulation environment of Claim 26, wherein the dynamic FIFO has a different timing behavior than that of the second unit.

31. (Currently Amended) A tool used in a simulation environment, the simulation environment including a first unit that produces data and a second unit for consuming the data, the tool comprising:

a dynamic first-in first-out buffer (FIFO) that interfaces between the first unit and the second unit,

the dynamic FIFO capable of automatically increasing its size based on a configurable wait period to eliminate deadlock between the first and second units, thereby determining an optimized size of the dynamic FIFO,

the dynamic FIFO determining whether a wait period has expired before increasing its size, and

the dynamic FIFO including an output interface that provides the optimized size to a simulator to reduce simulation time of the first and second units.

32. (Cancelled)

33. (Currently Amended) The tool of Claim ~~32~~ 31, wherein the dynamic FIFO is further capable of automatically increasing the wait period if its size is increased a predetermined number of times.

34. (Previously Presented) The tool of Claim 31, wherein the dynamic FIFO has a timing behavior different than that of the second unit.

35. (Previously Presented) A method of decreasing simulation time for a design, the simulation including a first model and a second model, the first model representing a first block of the design that generates a plurality of tokens, the second model representing a second block of the design that consumes the plurality of tokens based on a behavior, the method comprising:

providing a dynamic memory for receiving the tokens, storing the tokens, and providing the tokens in an order output by the first model when requested by the second model;

setting a wait period of the dynamic memory, wherein the wait period is defined by a predetermined number of cycles associated with the behavior;

decreasing the wait period each time the dynamic memory is full and the second model does not request a token;

increasing a size of the dynamic memory by an increment when the wait period is zero; and

based on decreasing the wait period and increasing the size, automatically determining an optimized wait period and size and providing the optimized wait period and size to a simulator to minimize simulation time of the first and second models.

36. (Previously Presented) The method of Claim 35, further including resetting the wait period after increasing the size of the dynamic memory.

37. (Previously Presented) The method of Claim 35, wherein the dynamic memory includes a first-in first-out buffer (FIFO).

38. (Previously Presented) The method of Claim 35, further including setting a maximum size of the dynamic memory.

39. (Previously Presented) The method of Claim 35, further including increasing a counter value each time the size of the memory increases.

40. (Previously Presented) The method of Claim 39, further including automatically increasing the predetermined number of

time units defining the wait period if the counter value exceeds a limit.

41. (Previously Presented) The method of Claim 39, further including setting a maximum wait period for the dynamic memory.

42. (Previously Presented) The method of Claim 39, wherein automatically increasing the size of the dynamic memory and automatically increasing the predetermined number of time units defining the wait period are alternately performed.

43. (Previously Presented) A dynamic memory useable in a simulation environment, the dynamic memory providing an interface between a first model and a second model, the first model generating a plurality of tokens, the second model consuming the plurality of tokens based on a behavior, the dynamic memory device comprising:

means for handling the tokens including receiving the tokens, storing the tokens, and providing the tokens in an order output by the first model when requested by the second model,

means for setting a wait period of the dynamic memory device, wherein the wait period is defined by a predetermined number of time units associated with the behavior;

means for decreasing the wait period each time the dynamic memory is full and the second model does not request a token;

means for increasing a size of the means for storing the tokens by an increment if the wait period is zero; and

means for outputting that receive outputs of the means for decreasing the wait period and the means for increasing the size, the means for outputting automatically determining an optimized combination of size and wait period of the means for storing the tokens, the means for outputting providing the

optimized combination to a simulator, thereby minimizing simulation time of the first and second models.

44. (Previously Presented) The dynamic memory of Claim 43, further including means for resetting the wait period after increasing the size of the dynamic memory.

45. (Previously Presented) The dynamic memory of Claim 43, wherein the means for handling the tokens is implementable with a first-in first-out buffer (FIFO).

46. (Previously Presented) The dynamic memory of Claim 43, further including means for setting a maximum size of the dynamic memory.

47. (Previously Presented) The dynamic memory of Claim 43, further including means for increasing a counter value each time the size of the dynamic memory increases.

48. (Previously Presented) The dynamic memory of Claim 47, further including means for increasing the predetermined number of cycles defining the wait period if the counter value exceeds a limit.

49. (Previously Presented) The dynamic memory of Claim 48, further including means for setting a maximum wait period for the dynamic memory.

50. (Previously Presented) The dynamic memory of Claim 49, further including means for alternately increasing the size of the dynamic memory and increasing the predetermined number of cycles defining the wait period.